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EXAMINER

MILLS, DONALD L

ART UNIT

PAPER NUMBER

2662

DATE MAILED: 04/06/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/628,378

Applicant(s)

CHEKURI ET AL.

Examiner

Donald L. Mills

Art Unit

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 22 January 2004.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-25 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-9 and 23-25 is/are rejected.
- 7) ☒ Claim(s) 10-22 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 22 January 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1-4, 8, 9, and 23-25 are rejected under 35 U.S.C. 102(b) as being anticipated by Markus (US 5,561,841).

Regarding claim 1, Markus discloses a method and apparatus for planning a cellular radio network, which comprises:

Applying an optimization process to a set of information characterizing the network
(Optimizing the operation of the network based upon its operation. See column 11, lines 13-16,) *the optimization process comprising at least a pre-frequency-assignment optimization stage, the pre-frequency-assignment optimization stage being applied to assignment of frequencies to one or more communication channels of the wireless network* (Optimization is performed by correcting the network configuration which comprises frequency allocation which is inherently for a wireless network. See column 11, lines 16-17 and column 5, lines 63-65.)

Utilizing an output of the optimization process to determine at least one operating parameter of the wireless network (Optimizing cell areas and channel handovers results in adjusting the borders of the service areas. See column 11, lines 29-33.)

Regarding claim 2, Markus discloses *a multistage optimization process having at least the pre-frequency-assignment optimization stage followed by a frequency assignment stage* (The optimal parameters, comprising frequency allocation, are determined prior to the assignment of frequency. See column 5, lines 65 and column 6, lines 1-4.)

Regarding claim 3, Markus discloses *repeating in an iterative manner the pre-frequency-assignment optimization stage and the frequency assignment stage* (The program operates iteratively utilizing the control parameters, comprising frequency allocation, which inherently comprises assigning the frequency a value. See column 11, lines 19-21.)

Regarding claim 4, Markus discloses *wherein the frequency assignment stage comprises a frequency planning stage* (Frequency planning is determined. See column 6, lines 1-2.)

Regarding claim 8, Markus discloses *wherein the operating parameter of the wireless network comprises at least one of a base station transmit power and an antenna orientation* (The network configuration of the wireless network comprises adjusting the base station by means of power level, which inherently includes transmit power. See column 11, lines 33-35.)

Regarding claim 9, Markus discloses *wherein the optimization process determines a network configuration for specified values of network capacity and network coverage* (Optimal locations and parameters are found for capacity and coverage. See column 5, lines 65-66 and column 6, lines 3-5.)

Regarding claims 23, 24, and 25, Markus discloses a method and apparatus for planning a cellular radio network, which comprises:

A processor-based system operative to apply (Claim 23)/Means for applying (Claim 24)/Applying (Claim 25) an optimization process to a set of information characterizing the

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network (Referring to Figure 1, the Network Planning System, inherently processor based, optimizes the operation of the network based upon its operation. See column 4, lines 46-48 and column 11, lines 13-16,) *the optimization process comprising at least a pre-frequency-assignment optimization stage, the pre-frequency-assignment optimization stage being applied prior to assignment of frequencies to one or more communication channels of the wireless network* (Optimization is performed by correcting the network configuration which comprises frequency allocation which is inherently for a wireless network. See column 11, lines 16-17 and column 5, lines 63-65.)

Wherein (Claims 23 and 25)/Means for utilizing (Claim 24) an output of the optimization process is utilized to determine at least one operating parameter of the wireless network (Optimizing cell areas and channel handovers results in adjusting the borders of the service areas. See column 11, lines 29-33.)

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Markus (US 5,561,841) in view of Faruque (US 6,128,497).

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Regarding claim 5 as explained above in the rejection statement of claim 1, Markus discloses all the claim limitations of claim 1 (parent claim). Markus does not disclose *wherein the wireless network implements a frequency reuse factor greater than one*.

Faruque teaches a fractional frequency reuse plan of that provides a cellular radiotelephone system $N=5.333$ capacity (See column 3, lines 23-25.) In addition, Faruque teaches that greater frequency reuse allows more mobile traffic to use the cellular system (See column 1, lines 51-53.)

It would have been obvious to one of ordinary skill in the art at the time the invention was made to implement the frequency reuse plan of Faruque in the cellular radio network planning method Markus. One of ordinary skill in the art at the time the invention was made would have been motivated to do so in order to allow more mobile users to access a cellular system.

5. Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Markus (US 5,561,841).

Regarding claim 6 as explained above in the rejection statement of claim 1, Markus discloses all the claim limitations of claim 1 (parent claim). Markus does not disclose *the wireless network comprising at least one of a TDMA wireless network, an FDMA wireless network, a CDMA wireless network, an OFDM wireless network, and a TDD wireless network*.

Markus teaches a method for planning a cellular radio network, specifically a GSM network, where the performance of the cellular network can be optimized (See column 2, lines 3-8 and column 5, lines 7-8.)

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It would have been obvious to one of ordinary skill in the art at the time the invention was made to implement CDMA or TDMA in the cellular radio network planning method Markus. One of ordinary skill in the art at the time the invention was made would have been motivated to do so in order to optimize CDMA and TDMA systems.

6. Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Markus (US 5,561,841) in view of Benveniste (US 5,404,574).

Regarding claim 7 as explained above in the rejection statement of claim 1, Markus discloses all the claim limitations of claim 1 (parent claim). Markus does not disclose *wherein the optimization process utilizes a derivative-based optimization of a specified objective function*.

Benveniste teaches a method for deriving an initial channel assignment based on a variation of the Channel Group Augmentation algorithm (See column 6, lines 43-45,) for efficient non-regular channel assignment (See column 1, lines 38-41.)

It would have been obvious to one of ordinary skill in the art at the time the invention was made to implement the method for non-regular channel assignment of Benveniste in the cellular radio network planning method Markus. One of ordinary skill in the art at the time the invention was made would have been motivated to do so in order to optimally use non-regular channels for efficiently utilizing the RF spectrum.

Allowable Subject Matter

7. Claims 10-22 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Response to Arguments

8. Applicant's arguments filed January 22, 2004 have been fully considered but they are not persuasive.

Rejection Under 35 USC § 102

On page 5 of the remarks, regarding claims 1 and 22-25, Applicant argues that Markus discloses a process of network planning which only includes "coverage planning," but not a pre-frequency assignment optimization. Examiner respectfully disagrees. Markus discloses frequency planning occurring when the operator positions the network elements in a digital map and determines antenna location, antenna power, antenna direction and frequency allocation (See column 5, lines 61-64.)

Applicant states that Markus describes a type of post-processing program that does not anticipate "pre-frequency assignment optimization." Markus specifies a simulation and optimization process that occurs prior to system installation, thereby, selecting, qualifying and optimizing the frequency of the system before the actual frequency is assigned for system turn-up. This clearly shows a pre-frequency assignment optimization.

Conclusion

9. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

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A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Donald L Mills whose telephone number is 703-305-7869. The examiner can normally be reached on 8:00 AM to 4:30 PM.


If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Hassan Kizou can be reached on 703-305-4744. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Donald L Mills



March 23, 2004



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